



ET1290 Crimp Machine

Set Up and Operating Manual



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Safety Instructions

Read and understand the operator's manual before attempting to operate any equipment.

WARNING

Aeroquip hose, hose fittings and assembly equipment should be used only with other Aeroquip hose, hose fittings and assembly equipment and Weatherhead hose, hose fittings and assembly equipment should be used only with Weatherhead hose, hose fittings and assembly equipment. Do not combine or use Aeroquip or Weatherhead hose, hose fittings and assembly equipment with each other, i.e. Aeroquip hose with Weatherhead fittings, or with hose, hose fittings or assembly equipment supplied by another manufacturer.

EATON HEREBY DISCLAIMS ANY OBLIGATION OR LIABILITY (INCLUDING INCIDENTAL AND CONSEQUENTIAL DAMAGES) ARISING FROM BREACH OR CONTRACT, WARRANTY OR TORT (UNDER NEGLIGENCE OR STRICT LIABILITY THEORIES) SHOULD AEROQUIP **OR** WEATHERHEAD HOSE FITTINGS OR ASSEMBLY EQUIPMENT BE USED **INTERCHANGEABLY OR** WITH **ANY** HOSE, FITTINGS OR ASSEMBLY EQUIPMENT SUPPLIED BY ANOTHER MANUFACTURER, OR IN THE EVENT THAT PRODUCT INSTRUCTIONS FOR EACH SPECIFIED HOSE ASSEMBLY ARE NOT FOLLOWED.



WARNING

Failure to follow process and product instructions and limitations could lead to premature hose assembly failures, resulting in property damage, serious injury or death.

Aeroquip and Weatherhead fitting tolerances are engineered to match Aeroquip and Weatherhead hose tolerances. The combination or use of Aeroquip or Weatherhead hose and hose fittings with each other, i.e. Aeroquip hose with Weatherhead fittings or with hose or fittings supplied by another manufacturer may result in the production of unreliable and/or unsafe hose assemblies and is neither recommended nor authorized by Eaton.

Safety Instructions

1. PREVENT UNAUTHORIZED OPERATION.
Do not permit anyone to operate this equipment unless they have read and thoroughly understand this manual.

2. WEAR SAFETY GLASSES.

3. AVOID PINCH POINTS.
Do not rest your hand on the crimp ring. Keep your hands clear of all moving parts. Do not allow anyone, other than the operator, close to the equipment while it is in operation.

4. MAINTAIN DIES WITH CARE. Dies used in the ET1290 crimp machine are hardened steel, offering the best combination of strength and wear resistance for long life. Hardened dies are generally brittle and care should be taken to avoid any sharp impact. Never strike a die with a hardened instrument.

5. USE ONLY SPECIFIED AEROQUIP/WEATHERHEAD PRODUCTS.
Make hose assemblies using only Aeroquip and Weatherhead hose and fittings specified for this assembly equipment.

6. VERIFY CORRECT CRIMP DIAMETERS.
Check and verify correct crimp diameters of all fittings after crimping. Do not put any hose assemblies into service if the crimp diameters do not meet Eaton crimp specifications.

7. Make sure all dies are completely in place and the cage is positioned properly on the pressure plate.

8. DO NOT OVER PRESSURIZE. Do not exceed the 10,000 psi hydraulic pressure supplied to the machine.

NOTE: All components used to connect the pump and crimp cylinder must meet the criteria set forth in the Material Handling Institute Specification #IJ100 for hydraulic jacking applications.

9. DIE CHANGE. DO NOT INSERT/REMOVE DIES WHILE THE POWER IS ON OR MACHINE IS IN OPERATION.

10. SECURE THE EQUIPMENT TO A STABLE WORK SURFACE.
Prior to operation, secure the crimp machine to a stable work surface to prevent the equipment from tipping.

11. UNPLUG THE POWER SUPPLY WHEN NOT IN USE.

12. KEEP WORK AREA CLEAN.
Cluttered areas and benches invite accidents.

Specifications and Equipment

ET1290 Crimp Machine



Die Cages

MASTER DIE INSERT SETS

ET1295DC-14S
ET1295DC-15S
ET1295DC-16S
ET1295DC-18S
ET1295DC-20S
ET1295DC-21S
ET1295DC-23S
ET1295DC-46S
ET1295DC-82S
ET1295DC-M070S
ET1295DC-M090S
ET1295DC-M120S
ET1295DC-M150S
ET1295DC-M180S
ET1295DC-M210S
ET1295DC-M240S
ET1295DC-M280S
ET1295DC-M320S
ET1295DC-M370S
ET1295DC-M420S
ET1295DC-M465S
ET1295DC-M520S
ET1295DC-M550S
ET1295DC-M570S
ET1295DC-M690S

Note: Insert Sets include 8 dies with insert pins.

FT1390 DIE CAGES

FT1390-200-14
FT1390-200-15
FT1390-200-16
FT1390-200-20
FT1390-200-21
FT1390-200-23

FT1209 DIE CAGES
FT1209-200-14
FT1209-200-15
FT1209-200-16
FT1209-200-18
FT1209-200-20
FT1209-200-21
FT1209-200-23
FT1209-200-46
FT1209-200-82

Machine w/110V Power Unit:

Crimper Dimensions:	30.75" W x 40.125" D x 41.25" H
Weight:	1035 lbs.
Pump Requirements	
Reservoir Capacity:	50 cubic inches or more (820 cc)
Pressure Rating:	10,000 psi (690 bar)

Machine w/220V Power Unit:

Crimper Dimensions:	30.75" W x 40.125" D x 41.25" H
Weight:	1035 lbs.
Pump Requirements	
Reservoir Capacity:	50 cubic inches or more (820 cc)
Pressure Rating:	10,000 psi (690 bar)

Table Top Machine:

Crimper Dimensions:	20" W x 41.25" D x 14.5" H
Weight:	910 lbs.
Pump Requirements	
Reservoir Capacity:	50 cubic inches or more (820 cc)
Pressure Rating:	10,000 psi (690 bar)

Accessories

M-SERIES DIE CAGES

FT1307-200-M070
FT1307-200-M090
FT1307-200-M120
FT1307-200-M150
FT1307-200-M180
FT1307-200-M210
FT1307-200-M240
FT1307-200-M280
FT1307-200-M320
FT1307-200-M370
FT1307-200-M420
FT1307-200-M465
FT1307-200-M520
FT1307-200-M550
FT1307-200-M570
FT1307-200-M690

Bench Top Rack - A rack that can hold 12 sets of die inserts. This can be mounted to a bench top.
ET1295C-0029

Hanging Rack - A rack that can hold 12 die inserts. This can be hung from the FT1290, FT1307, FT1340, FT1360 and FT1390 Crimp Machines.
ET1295C-0027

Insert Holder - An insert holder for one set of die inserts. This can be mounted to the front or side of a crimp machine. **ET1295C-0025**

Lubrication - A can of Never-seez to lubricate the dies. **FT1092**

Set-Up and Operating Instructions

Set-Up

110V/220V Power Unit:

1. Remove the plug from the hydraulic reservoir vent and replace it with the vent cap supplied with the unit.

Caution: Failure to do so will cause cavitation and damage to the pumping mechanism. Hand tighten the vent cap.

2. **Caution:** Provide electrical service with a dedicated circuit (per the crimp machine electrical requirements) to eliminate the possibility of a low voltage situation.

3. Never use an extension cord, always plug directly into the power outlet.

Operating Instructions

Loading and Unloading Die Cages

Select proper die cage for style and size of desired hose. Refer to the current Crimp Specifications Manual on the Eaton website for complete and detailed crimp specification information for each hose and fitting style. To load the die cage, press and hold the footswitch until the crimp cylinder reaches the "full retract" position and stops. The die cage may be inserted or removed in this position. (See figure 1.)



Caution: Figure 2 shows a die cage that is installed improperly. When inserted properly, the cage is flush against the pressure plate. If the die cage is at an angle to the pressure plate, lift it up and realign properly.

Adjustable Backstop (Figure 3)

1. Turn off the power to the machine.
2. Insert the die cage.
3. Loosen the thumbscrew on the backstop.
4. Place the fitting against the locator cone. Pushing it too hard will compress the spring, which will affect the accuracy of the position.
5. Slide the backstop to the desired position.
6. Tighten the thumbscrew.
7. Turn the power on.

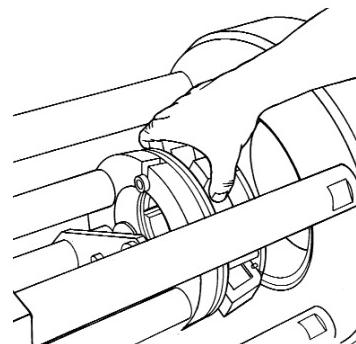


Figure 1

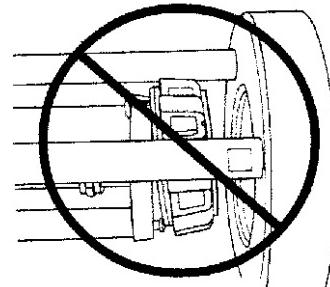


Figure 2

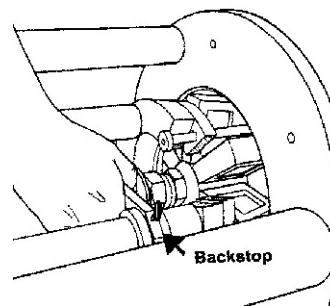


Figure 3

Crimping Procedures

WARNING:

Maintain clear distance from all moving parts.

Establishing Crimp Settings

The adjustment knob in the middle of the machine determines the crimp diameter for each combination of hose, fitting and die cage/die insert. The numbers on the dial and barrel of the machine are for selecting target settings and not crimp diameters. Settings between 160 and 550 can be achieved with this crimp machine. Consult the target setting chart for the ET1290 crimp machine for the initial setting.

There are 25 marks on the dial (0-24) and 15 marks on the barrel (175-525 by 025 increments). The top of the barrel corresponds to a 160 setting. When the adjustment knob is rotated to the top most position on the crimper, and the "0" mark is located as shown in Figure 4, the machine setting is 160. Each complete downward rotation of the adjustment knob increases the target setting by 025; each mark around the dial corresponds to a 001 change in target setting. For example, to achieve a target setting of

250, the adjustment knob is rotated until the top of it corresponds to the 250 mark on the barrel, and the 0 mark on the dial is lined up with the center, vertical mark on the barrel (see Figure 5). One more full downward rotation of the

dial would result in a target setting of 275. If the desired target setting is 265, the dial would instead be rotated downward 15 "marks" on the dial, or approximately 2/3 of a turn, past the 250 target setting.

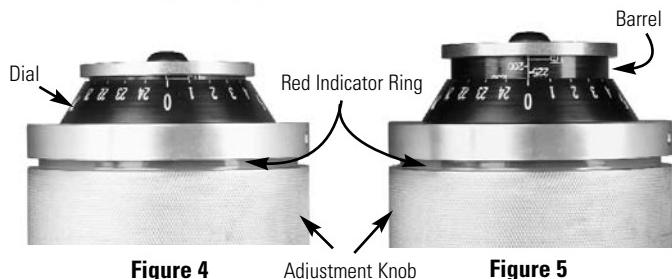


Figure 4 Figure 5

Crimping Procedures

Refer to the current Crimp Specifications Manual on the Eaton website for complete and detailed crimp specification information for each hose and fitting style.

1. Select and load the proper die cage/die insert according to the current Crimp Specifications Manual on the Eaton website.
2. Rotate the adjustment knob/barrel indicator to the proper setting (see Example).

3. Position the fitting to the proper crimping position within the die cage/die insert according to the Crimp Specifications Manual on the Eaton website.

4. Press and hold the foot switch in the forward position.
5. The foot switch may be toggled back and forth as required to reposition the fitting.

Note: The use of a 10,000 psi hydraulic power source is required to operate the ET1290 crimp machine. If lower rated power units are utilized, improper crimping may result.

5. When the fitting is fully crimped, all movement in the machine will stop and the black guard around the piston (pinch point hat) will move up and completely cover the red indicator ring (see figure 4 and figure 5) located on the adjustment knob.

6. Release the hydraulic pressure and remove the crimped hose assembly.

This is accomplished by pressing and holding the foot switch in the release position until the machine is completely retracted.

7. Verify that the correct crimp diameter and crimp length is achieved.

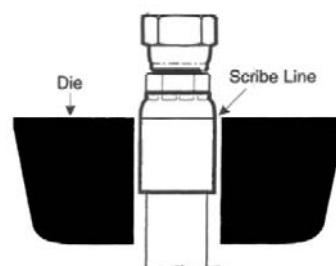


Figure 6

For proper crimping procedure, refer to the Crimp Specification Manual on the Eaton website.

Example:

Position the adjustment knob at a setting of 500. Activate the hydraulic pump and attempt a crimp. If the dies crimp the fitting, measure the crimp diameter and decrease the machine setting (rotate the adjustment knob upward) by the same amount in thousandths of an

inch that you wish to decrease the crimp diameter (a smaller target setting number means a smaller crimp diameter). If the dies do not crimp the fitting, decrease the machine setting by 050 increments until the dies touch the fitting and the resultant crimp diameter can be measured.

For a target crimp diameter of 0.990 inches and a machine setting of 250 produces a crimp diameter of 1.004 inches, subtract the target crimp diameter (0.990 inches) from the diameter you measured (1.004 - 0.990 = 0.014). Subtract 014 from the machine setting (250-014=236)

and change the machine setting to 236. Crimp the fitting again and measure the crimp diameter. If the crimp diameter is too large, repeat this process. If the crimp diameter is too small, repeat the process but instead add the difference to the machine setting.

Calibration



WARNING:

Maintain clear distance from all moving parts.

The ET1290 Crimp Machine is factory calibrated. A TTC-8 or WeatherGRIP -8 fitting crimped with an FT1307-200-M240 die cage or the



Figure 7

Master Die Cage with the M240 die insert and a machine setting of 260 should result in a socket diameter of 1.000 +/- 0.003 inches.

If excessive wear occurs in the crimp ring, or any of the functional components are replaced, a minor recalibration may be necessary. This can be accomplished by first loosening the two #8-32 set screws in the adjustment

knob (see Figure 7) and then performing the crimp described above.

If the actual measured crimp diameter is, for example, 1.010 inches instead of 1.000 inches, the black dial piece can be rotated inside the adjustment knob (leaving the adjustment knob exactly where it is positioned) until the number "0" on the dial lines up with the center vertical line on the barrel.

Then rotate the adjustment knob and dial together until the "0" mark on the dial is once again lined up with the center vertical line on the barrel. Repeat the crimp procedure until the 1.000 inch crimp diameter is achieved.

Maintenance

Intervals

DIE CAGE LUBRICATION

Every 50 crimps	Relube sliding surfaces of dies
Every 500 crimps	Remove old grease and relube
Every 1000 crimps	Die cage maintenance

Procedures

MACHINE MAINTENANCE PROCURES

1. Sliding surfaces must be kept free of dirt and other abrasive materials.
2. All exposed black metal surfaces should be coated occasionally with a light film of oil to prevent corrosion.
3. Periodically check the oil level in the fluid reservoir of the hydraulic power unit. Maintain the oil level of pump manufacturer's hydraulic oil as needed.

NOTE: Completely retract the crimp ring when checking the oil level.

CRIMP RING MAINTENANCE

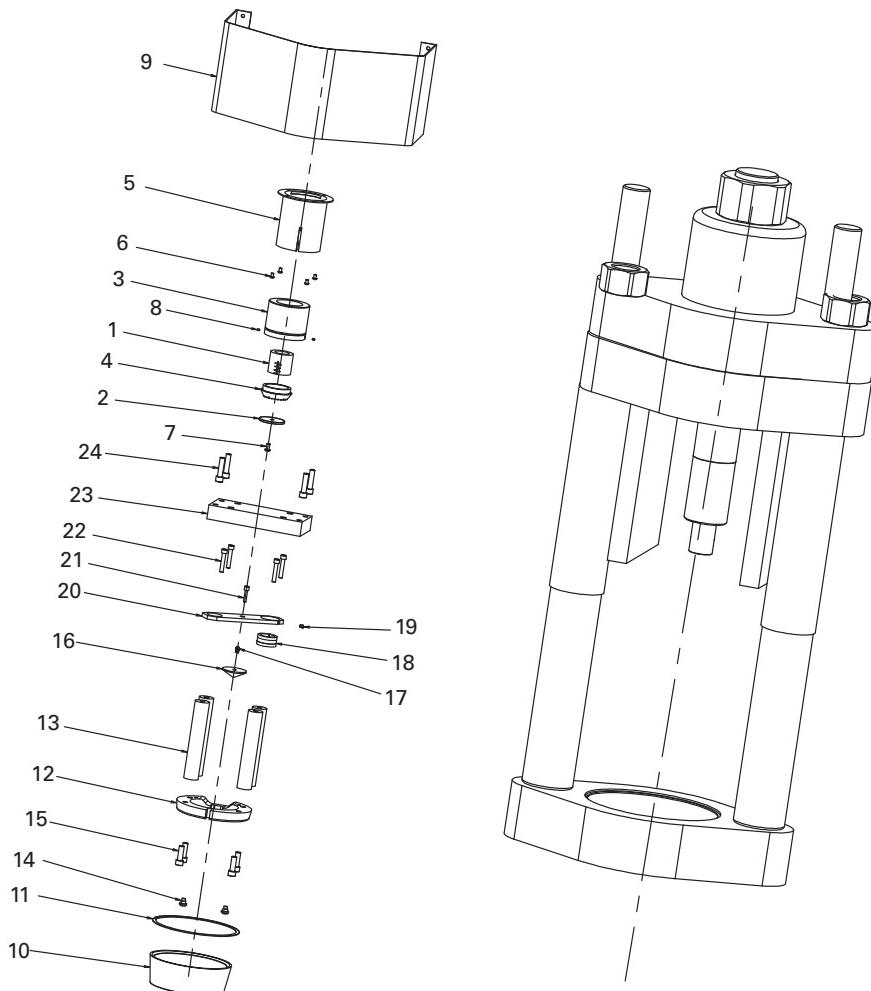
Every 500 crimps	Remove old grease and relube
Every 2000 crimps	Remove old grease; Inspect for wear or damage and relube if okay.

NOTE: Use NEVER-SEEZ lubricant (Eaton part number FT1092).

DIE CAGE MAINTENANCE PROCEDURES

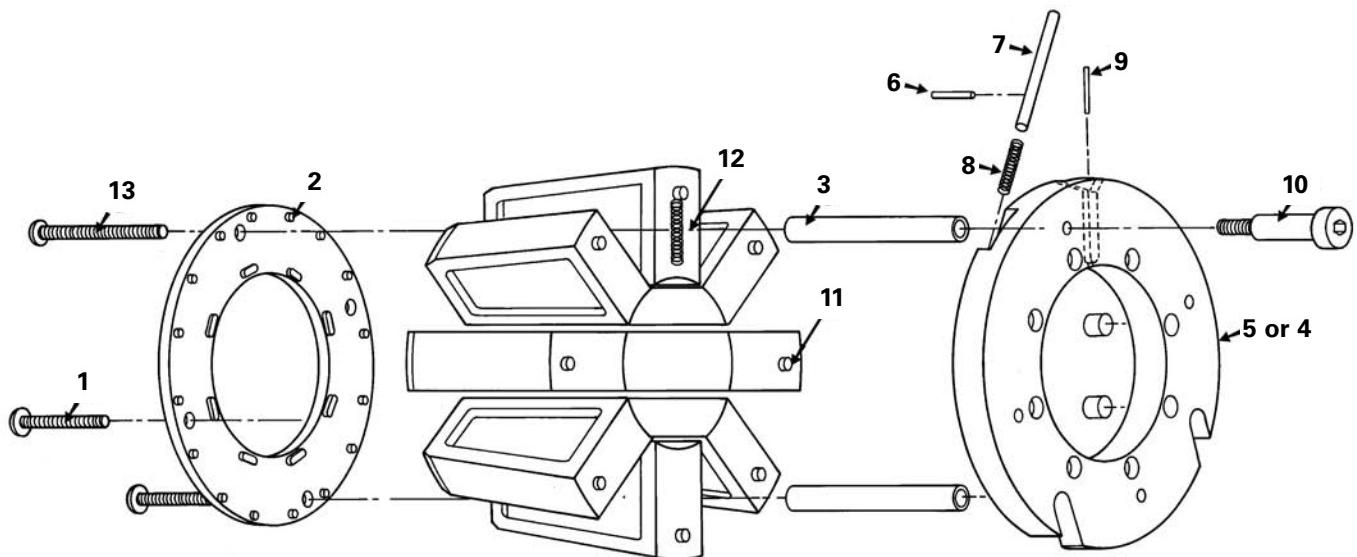
1. Lubricate the die cage. For maximum service, Die cages require lubrication at 50-crimp intervals with NEVER-SEEZ (Eaton part number FT1092). FT1092 is an 8-ounce container that will provide sufficient lubricant for approximately 5,000 crimps.
Periodically remove NEVER-SEEZ residue that has built-up on the sides of the dies and the crimp ring during the crimping process. NEVER-SEEZ residue becomes contaminated with metal and plating chips and airborne contaminants, which can cause premature wear of the dies and crimp ring. It should carefully be removed without mixing it with newly applied NEVER-SEEZ.
2. Die cage maintenance should be performed at 1000-crimp intervals or every six months, whichever occurs first. Die cages should be clean of grease and debris and inspected for worn or damaged components.
 - a. The sliding surface of the dies should appear smooth with no apparent galling. Galled dies must be replaced. Individual dies in a cage can be replaced without replacing all eight dies.
 - b. Replace springs that show any sign of damage or collapse (are shorter than other springs).
 - c. The spring plate should appear smooth with no apparent galling. Galled spring plates must be replaced.
 - d. Inspect remaining components and replace those that are badly worn.
3. Reassemble components and liberally apply NEVER-SEEZ to the die surface which slides along the spring plate. Torque the die cage bolts to 50in.-lbs.
4. Ensure that all dies slide in and out freely.

Crimp Machine Components



ITEM	PART NUMBER	DESCRIPTION	QUANTITY
1	ET1290C-0002	Barrel	1
2	ET1290C-0012	Washer	1
3	ET1290C-0003	Adjustable Knob	1
4	ET1290C-0001	Dial Indicator	1
5	ET1290C-0007	Pinch Point Hat	1
6	FF90625	1/4-20 x 3/8" Button Head Cap Screw	4
7	ET1280C-0014	5/16-18 Button Head Cap Screw	1
8	FF90626	Set Screw	2
9	ET1290C-0015/ET1290C-0017	Red Shroud/Yellow Shroud	1
10	FT1289-2-2-15	Crimp Ring Insert	1
11	FT1289-2-2-14	Retaining Ring	1
12	FT1289-3-15	Pressure Plate	1
13	FT1289-3-13	Push Bars	4
14	FT1303-3-76	Shoulder Bolts	2
15	FF9339-08-245	Cap Screws	4
16	FT1340-3-4-6	Locator Cone	1
17	FT1340-3-4-2	Spring	1
18	FT1340-3-4-4	Bushing	1
19	FT1340-3-4-5	Thumb Screw	1
20	FT1340-3-4-3	Locator Plate	1
21	FT1340-3-4-1	Shoulder Bolt	1
22	222003-6-405	Cap Screws	4
23	ET1290C-0022	Middle Support	1
24	222003-8-325	Cap Screws	4

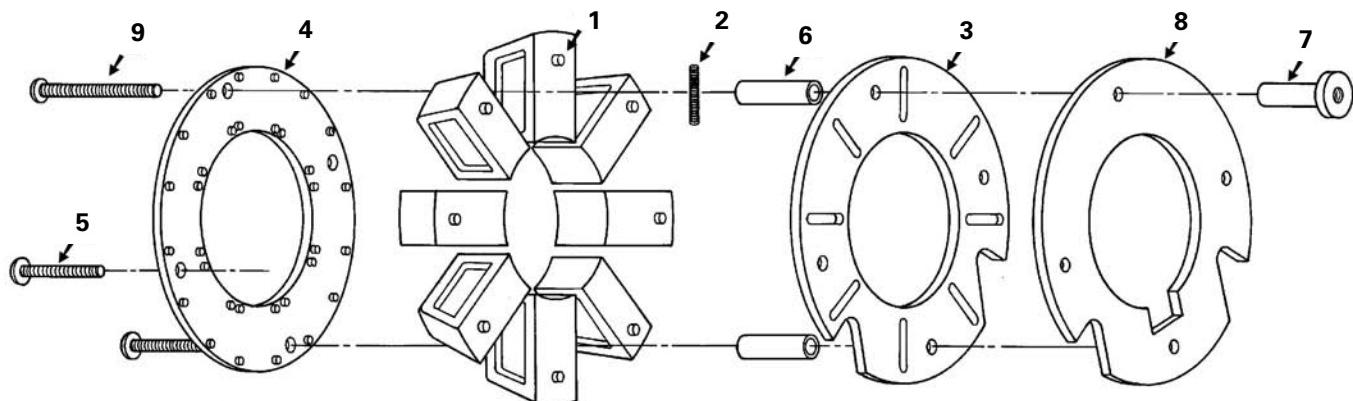
Die Cage Components



FT1209 Die Cage Breakdown

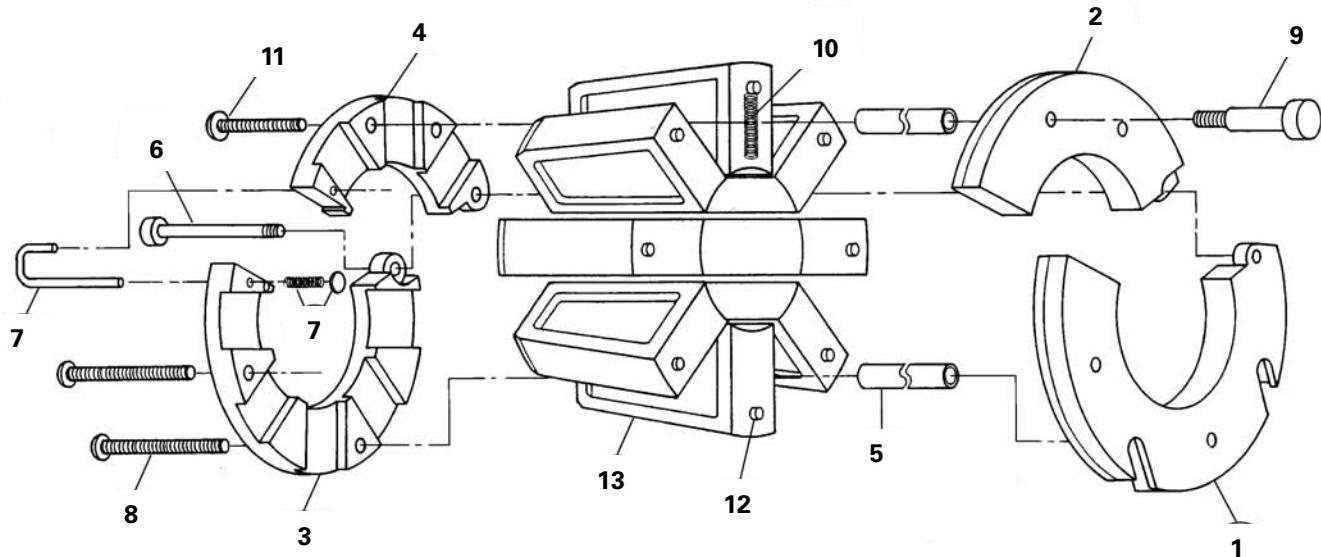
DETAIL	QTY	PART NUMBER	DESCRIPTION
1	3 pc	FT1209-2-9-1	BHCS 5/16-18x3.90 long
2	1 pc	FT1209-2-9-2	Front Plate
3	4 pc	FT1209-2-9-3	Spacer
4	1 pc	FT1209-2-9-4	Back Plate Assembly (Details 5 through 9)
5	1 pc	FT1209-2-9-4-1	Back Plate
6	2 pc	FT1209-2-9-4-2	Roll Pin .09 dia x .50 long
7	2 pc	FT1209-2-9-4-3	Rod
8	2 pc	FT1209-2-9-4-4	Spring
9	2 pc	FT1209-2-9-4-5	Roll Pin .125 dia x .75 long
10	1 pc	FT1209-2-9-5	Shoulder Screw
11	8 pc	21057-7	Roll Pin .25 dia x .62 long
12	1 pc	FT1209-2-9-7	Spring
13	1 pc	FT1209-2-9-8	BHCS 5/16-18x3.50 long

Die Cage Components



FT1307 Die Cage Breakdown

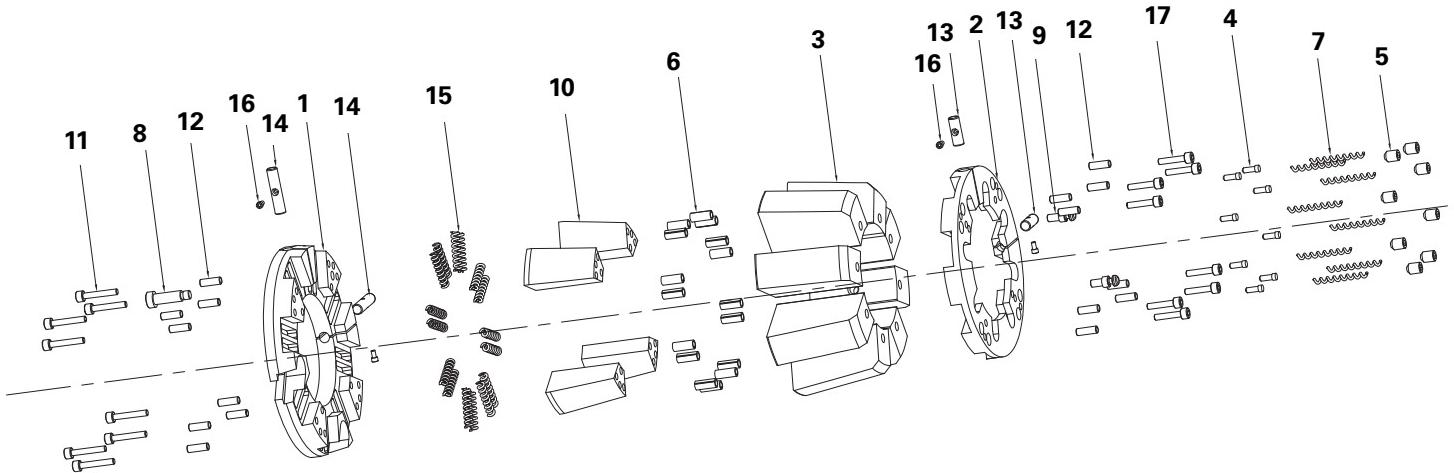
DETAIL	QTY	PART NUMBER	DESCRIPTION
1	8 pc	21057-7	Roll Pin .25 dia x .62 long
2	8 pc	FT1209-2-9-7	Spring
3	1 pc	FT1307-2-9-3	Spring Plate
4	1 pc	FT1307-2-9-4	Front Plate
5	3 pc	FT1307-2-9-5	BHCS 5/16-18x2.56 long
6	4 pc	FT1307-2-9-6	Spacer
7	1 pc	FT1307-2-9-7	Nut
8	1 pc	FT1307-2-9-8	Back Plate
9	1 pc	FT1307-2-9-10	BHCS 5/16-18x3.00 long



FT1390 Die Cage Breakdown

DETAIL	QTY	PART NUMBER	DESCRIPTION
1	1 pc	FT1390-2-9-1	Back Plate (lower)
2	1 pc	FT1390-2-9-2	Back Plate (upper)
3	1 pc	FT1390-2-9-3	Front Plate (lower)
4	1 pc	FT1390-2-9-4	Front Plate (upper)
5	4 pc	FT1390-2-9-5	Spacer
6	1 pc	FT1390-2-9-6	Shoulder Screw (long)
7	1 pc	FT1390-2-9-7	Latch Assembly
8	3 pc	FT1209-2-9-1	BHCS 5/16-18 x 3.90 long
9	1 pc	FT1209-2-9-5	Shoulder Screw (short)
10	8 pc	FT1209-2-9-7	Spring
11	1 pc	FT1209-2-9-8	BHCS 5/16-18 x 3.50 long
12	8 pc	21057-7	Roll Pin .25 dia. x .62 long
13	8 pc	FT1209-200-size	Dies

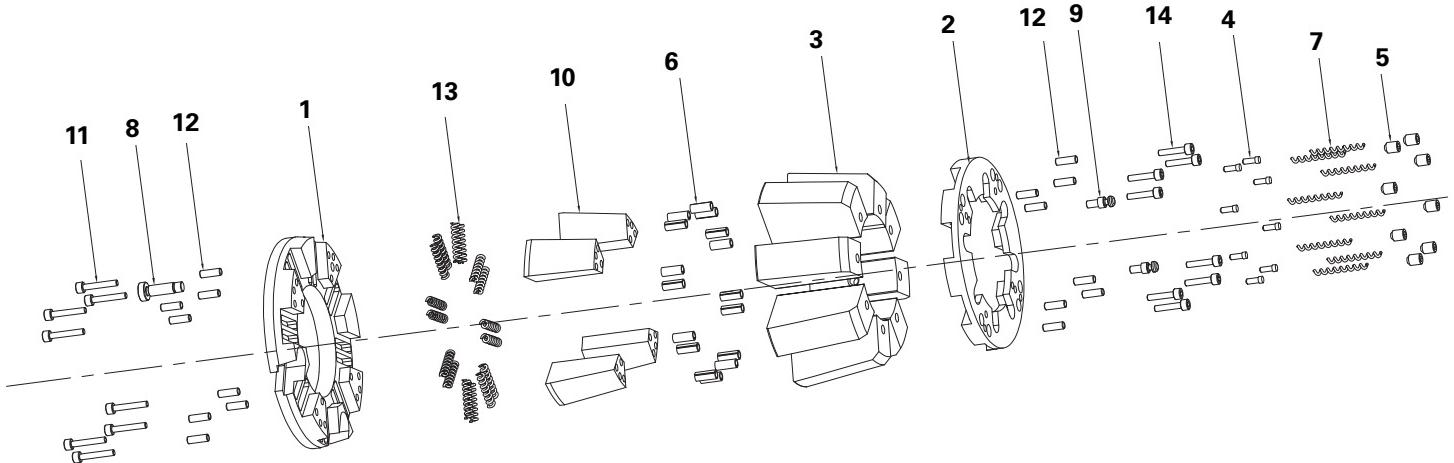
Die Cage Components



ET1295-001 (2-Piece Assembly)

DETAIL	QTY	PART NUMBER	DESCRIPTION
1	1	ET1295C-0006	Back Plate (Split)
2	1	ET1295C-0007	Front Plate (Split)
3	8	ET1295C-0001	Master Die
4	8	ET1295C-0003	Plunger Pin
5	8	ET1295C-0004	Set Screw
6	16	120-70188-46	Roll Pin
7	8	ET1295C-0005	Spring
8	1	FT1209-2-9-5	Shoulder Screw
9	2	ET1295C-0012	Rotation Pin
10	4	ET1295C-0009	Connecting Block
11	8	FF9339-04-20S	Cap Screw
12	16	ET1295C-0017	Dowel Pin
13	2	ET1295C-0011	Front Locating Pin
14	2	ET1295C-0010	Rear Locating Pin
15	16	ET1295C-0013	Spring
16	4	222003-1-6-6S	Cap Screw
17	8	FF9339-04-12S	Cap Screw

Die Cage Components



ET1295-011 (1-Piece Assembly)

DETAIL	QTY	PART NUMBER	DESCRIPTION
1	1	ET1295C-0021	Back Plate
2	1	ET1295C-0022	Front Plate
3	8	ET1295C-0001	Master Die
4	8	ET1295C-0003	Plunger Pin
5	8	ET1295C-0004	Set Screw
6	16	120-70188-46	Roll Pin
7	8	ET1295C-0005	Spring
8	1	FT1209-2-9-5	Shoulder Screw
9	2	ET1295C-0012	Rotation Pin
10	4	ET1295C-0009	Connecting Block
11	8	FF9339-04-20S	Cap Screw
12	16	ET1295C-0017	Dowel Pin
13	16	ET1295C-0013	Spring
14	8	FF9339-04-12S	Cap Screw

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